

SEQUENCE LISTING

<110> Ye, Rick
Bedzyk, Laura
Wang, Tao

<120> NATURAL PROMOTERS FOR GENE EXPRESSION IN *BACILLUS* SPECIES

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<212> DNA
<213> Bacillus subtilis

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<212> DNA
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<212> DNA
<213> Bacillus subtilis

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<213> *Bacillus subtilis*

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<213> *Bacillus subtilis*

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<210> 9
<211> 972
<212> DNA
<213> *Bacillus subtilis*

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 <213> Bacillus subtilis

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<210> 12
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<210> 13
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<212> DNA
<213> Bacillus subtilis

<400> 13
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aaagaagtag actctaaaaa acctaaattt atttatgttt atgagacaag ttgtcctcct 180
tgtcaagaaa taaaacctga gttaaatgaa gtaattaaaa aagaaaagtt aaaagtacag 240
gcttttaata ttgaagaaaa ggaaaattat aacactgaat ttttagataa atataatttg 300
aataaaaactc caacgattct ctattacaaa gatggcaaag aaaaagatcg gtttagagggc 360
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<210> 14
<211> 1269
<212> DNA
<213> Bacillus subtilis

<400> 14
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attcaatctt tgggtgcagg ttatgaaaaa tcagatactc ctacaataac atgcgggtatt 180
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gattttcctg atgttgaaat taaatatgaa aagtggaga atgatttttc ctatgctaga 360
aataaaaatta tagagtatgc tacttccgaa tggatttatt ttattgatgc agataattta 420
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<210> 15
<211> 447
<212> DNA
<213> Bacillus subtilis

<400> 15
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tatcaaagaa tattttctata tcctatacct attatcttac taataggctt attaaaaaaa 180
gatcttaatt cgatatttta tgttggtttc ctttcatcaa ttggattgat tattgcgttt 240
tatcattata ttatccaact tacacaaagc aaaagtgtcg tatgtgaaat tggaaaccaac 300
agctgcgcaa aaattgaagt agagtatcta ggctttatta cattaccctt aatgagttca 360

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aaacaaaatc	aacatgtata	taattga				447

<210> 16
 <211> 954
 <212> DNA
 <213> Bacillus subtilis

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ggagaaaaaa	tgagagccaaa	tattgaaaag	attcttgaaa	tgaagccaga	tgttatcctt	360
gcttcaacaa	agtttccgga	aaaaacgctg	caaaaaatca	gcacagcagg	cacgacgatc	420
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gtcaaagaag	accatgtgta	tgtcaactca	gtggaccctc	tcgcacaagg	cggcacagct	900
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<210> 17
 <211> 1005
 <212> DNA
 <213> Bacillus subtilis

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tcacttttgc	tttcaatcct	ttatggggca	aagcatctca	gcacagatat	tgtttttaca	120
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ccaagggctg	ccggcgctct	gctcataggg	gcagcccttg	ctgtttctgg	agcgcttatg	240
cagggcatta	cgcgcaatta	tttagcttcg	ccatccatta	tgggtgtttc	agatggttca	300
gcgtttatca	ttacgctttg	catggttctg	ctcccgcaat	catcttcgat	tgaaatgatg	360
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ccgtgttcct	gtattttggg	cggaaatctt	ttaaccctgt	gtgatctcgc	aagcagattt	900
atcaactatc	cgttttgaaac	accgattgag	gtcgtaacat	ccattatcgg	cgtacctttc	960
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<210> 18
 <211> 1185
 <212> DNA
 <213> Bacillus subtilis

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ccgaatccgc	agtatgaaat	tttgctgttc	gatttaagac	tgccgcgggt	tgatcatggc	180
gctattattg	gactcggctc	tggcattgca	ggcgtgttta	tccaggccat	cacgagaaac	240

gggcttgctg	accctggaat	tctcggaaatc	aacgcagggg	caggagctgg	cattgtagcg	300
tttatgctct	tattccaagg	ccagaaggaa	gtgacatcca	tagctgcagc	gatgggaatg	360
ccgctctttg	gattgatagg	cgggctcatc	gcggcgatcc	tgatttacat	atttgcattg	420
cacagaggca	atthagattc	aggaagaatt	attttggtag	ggattgcat	caattcagga	480
ttcagcgccc	tgtctttgtt	tttatcttta	aaaatggacc	cgcaagacta	tcaaattggcc	540
atgggtgtgga	aaaacggaag	catctgggtc	gccaaactgga	cgtatattac	agctgtactc	600
ccatggatgc	tgctgtttat	accgattctt	atcggcacaat	cccgcctgct	cgacaccatt	660
cgttttgatg	aagacacagt	cagaagcctc	ggtattttcat	caaataaaga	aaaaaccatc	720
cttctcggtg	cctgtgtagc	aatcatcagc	gcctgtgtct	ccgtagcggg	aagtatggcg	780
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agacagcggg	ggatttcctg	ctggtttacg	gcaggatggc	agttctttgt	tccaaaacca	1140
aatcgaatta	ctagaaagcg	cctttcaaca	gcaaaggctc	cctga		1185

<210> 19

<211> 477

<212> DNA

<213> *Bacillus subtilis*

<400> 19

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atggatgctg	cttggtttac	ctcctatgat	tatgtactga	ttggcaccta	tacatggggg	180
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aatgggtttta	aaacagcctg	cttcgggtct	ggcgattatt	cttatccaaa	gttttgcgaa	300
gcggtgaatt	tgttcaatgt	catgctgcaa	gaggcgggag	ctgctgttta	ccaggaaaca	360
ctaaaaattg	aattagcgcc	tgaaacagat	gaagatgtgg	aaagctgccg	agcgtttgcg	420
agaggttttc	ttgcatgggc	agattatatg	aacaaggaaa	aatccatgt	ttcataa	477

<210> 20

<211> 894

<212> DNA

<213> *Bacillus subtilis*

<400> 20

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gccgaatttc	ataatcccc	tggtatccgg	tcgttatgcc	ttcacggggg	caatctcttt	420
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aatgggtttt	cgagaattta	ccaggttgat	ctcgaagccc	ggcgtttaa	atggttcgat	780
accattaagg	gacatggatg	gagagtggcc	aatcagaaag	agaatttctt	ttgcgcaggc	840
ttgtatgaat	gtaaatttgt	ccagccgtac	gaagtttcag	caatgattca	ttag	894

<210> 21

<211> 537

<212> DNA

<213> *Bacillus subtilis*

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tcggtaaaaa	tcgaaaataa	tccagaaggt	gaagaagagg	aagaattaat	aaacttcggg			420
agacaattcg	caaagaaaaa	gcgggtgcgc	tgtctgatca	ctcactggga	actgctaaaa			480
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<210> 22

<211> 786

<212> DNA

<213> *Bacillus subtilis*

<400>	22							
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ccgctcaaaa	aactagccaa	gccttcggat	attgcggatg	cgggtgctctt	tttggtttct			720
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gtgtaa								786

<210> 23

<211> 939

<212> DNA

<213> *Bacillus subtilis*

<400>	23							
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tattttgttg	atgctttcac	agcgggagcg	tctccggtaa	cagagctttc	agcgaatata			180
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<210> 24

<211> 1197

<212> DNA

<213> *Bacillus subtilis*

<400> 24
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attgtaccgg aggcagacgg gcaaaaccaa atggaaaccc tttctggccg aattgcagag 180
gcgttacgtc aggcataaaca atcaggggcaa agccggccgc ttgttgctcg ggccgttcct 240
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<210> 25
<211> 1488
<212> DNA
<213> *Bacillus subtilis*

<400> 25
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aaccggcgca ccggcgaaac cttgatgacg ctgtatgaag cccaggctgc ggatgtggac 180
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totccatttg gcggttataa acagtcagga ctcggacgag aaatgggatc atatgccttg 1440
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<210> 26
<211> 1146
<212> DNA
<213> *Bacillus subtilis*

<400> 26
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 ttatcagagt ttgaattttt gaaatcttta tacttatcag gcccgatga agaagcaatt 960
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 attgatgtgg caaaatatta tcatgaacgt aaaaattttc aaaaagcttc tgcttatttt 1080
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 gtctaa 1146

<210> 27
 <211> 1098
 <212> DNA
 <213> *Bacillus subtilis*

<400> 27
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 gacatggaag aggatcagga ggtgcttgcc tacttctcct tattggaact gcgccacaag 180
 gttttgcttc acgaggcgag aggacagggc tttcagcatg aggagcctc tcatatgaat 240
 gctacgtctg acatgctgaa atattacttt tttctgtttg aaggcatgta tgaggcctat 300
 aaaaataatt atgacattgc cattgggctg tataaagatg cagagcagta tctcgacaac 360
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 ctgggacaaa atattgtgtc cctcaatcat acacggcaag cagtcaaaac attcagagaa 480
 gagacagatt ataaaaagaa gctggcttca gccctgatta ccatgtcagg caattttaca 540
 gagatgagcc agtttgaaga agctgaggct tatttggacg aagcaattcg gatcacgagt 600
 gaattagagg atcatttttt tgaagcccag cttttgcata acttcggcct tctacatgcg 660
 caaagcggca aatcagaaga agcggtttcg aaattagagg aggccttaca gaacgatgag 720
 tatgcccgtc ccgcctatta ttatcattct gcctacttgc tgatacgaga gctgtttaag 780
 atcaaaaaga aagaacaggc cttatcttat taccaagacg tgaaggaaaa attgactgct 840
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 ggtcatgctg aaacgtttca cttatgcaaa caacatatgg atgacttggt gtccgagaaa 960
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 ctttacaag aagctgcca ctttttttat gaagcattac agattgaaga actgattaaa 1080
 cgaacggagg ttatataa 1098

<210> 28
 <211> 1296
 <212> DNA
 <213> *Bacillus subtilis*

<400> 28
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 cagcagatgg aagaagatca ggatttactg atctattatt ctctgatgtg ttttcggcac 180
 cagctgatgc ttgattattt ggagccggga aaaacatacg ggaatcgccc tacagtgaca 240
 gagcttcttg aaacgatcga gacccctcag aaaaaactca caggtctttt gaaatactac 300
 tctttgtttt tccgcgccat gtatgaattt gacaaaaaag aatatgtgga agcgatcgga 360

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ttccatttta	aagtggcaga	agcgtattat	cacatgaagc	aaacccatgt	gtcgatgtat	480
catattcttc	aagccttgga	catttatcaa	aaccatcttc	tatacagcat	tagaacgata	540
caaagcttgt	ttgtgatcgc	cggcaactat	gatgatttca	aacattatga	taaagcgctc	600
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gtgatgatgt	gtctggctgt	tactctagtt	ttcgggaagca	tgctgtttcc	aaccctgaca	1200
aactccggtg	gatttaagga	atcgacagat	cgaaatacga	cgtatatcga	tcattcccct	1260
tacaaactta	gtgatcagaa	gaaagccctt	agctag			1296

<210> 29

<211> 1116

<212> DNA

<213> Bacillus subtilis

<400> 29

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gaaatggaag	aagatcaaga	agttccttgcg	tattatagtc	tattagaaga	aagacataaa	180
atgttgctgc	attcttcacg	aggagagcct	ttacaaaagc	acacctatct	tactgaagac	240
aatcaaaact	tcataacaaa	aacaaatgat	aaattagaat	acaactttta	tttatttgaa	300
gcaatgtacg	aggcatacaa	caaaaactat	gatcgagcaa	ttaacctata	tggattagct	360
gagaaaaagc	ttgcagaaat	tccagatgaa	attgaagcag	ctgaatttta	ctctaaagtc	420
tcttacttat	atactcttgt	taaacaaagc	attgtggcac	aacattatat	aaaaaatgca	480
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gcaattgata	ttgcaaaaaga	aacaaaagat	gaatttttaa	aagctcaatt	atttcacaaat	660
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gcaataggaa	atgaatcttg	gttacattcg	atttattata	taaattcttt	attcatgatg	780
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caggaaagac	tcatattaat	ggagaataaa	gtatacgaag	ccaaaatcag	catcctgtat	900
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tttgaatcaa	taggtgcttt	tgaagaagca	acgagctttt	tcaatgcgaa	aatttgaggct	1080
gaacagaaaa	tgaatcaggt	ggagggaatc	ttatga			1116

<210> 30

<211> 1089

<212> DNA

<213> Bacillus subtilis

<400> 30

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cgaactgcag	ccggttttgt	tgatgtatct	catatgggag	aagtcgaagt	gtcagggaac	180
gacagtctgt	cttttttgca	aagattgatg	acaaatgatg	tttccgcggt	aacgccaggc	240
cgtgctcaat	atacagcgat	gtgttaccgc	gatggcggaa	ccgtcgatga	tttgcttata	300
tatcaaaaag	gagagaaccg	ctatctgctt	gtcattaatg	cttctaataat	agataaagac	360
ttggcttgga	tgaagaaca	tgcagcaggt	gatgtgcaga	ttgacaatca	gtcagatcaa	420
atcgcgctct	tggctgtaca	gggaccgaaa	gcagaagcga	tcttaaaaaa	tctgacagat	480
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aaagcactta	tttcacgcac	tggctatacg	ggagaagacg	ggtatgaaat	ttactgccgc	600
agtgatgatg	ctatgcatat	ttggaaaaaa	atcatcgatg	caggggatgc	atacggattg	660

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gcgaagcgca	aacttgctcg	tctcgaaatg	attgaaaaag	ggataccgcg	gcacggatat	900
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ttaggaaaaa	acgtcggcct	tgccttaatt	gattcggaaa	cgagtgagat	cgggactgtt	1020
gtagatgtag	agatacgcaa	aaaattagtg	aaagcaaagg	ttgtcaaaac	accattttat	1080
aaacgctaa						1089

<210> 31

<211> 1347

<212> DNA

<213> Bacillus subtilis

<400> 31

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ggcgtaagca	gcatcgatga	tttattttgct	gatataccgg	aaaacgtcaa	atataaaaaa	120
gagcatcaaa	tcaaaaaagc	gaaatcagag	acagaattaa	caagagaact	gacaaagctg	180
gcctctaaaa	atcgtgatac	cgtacaatac	gcttctttct	taggagcggg	tgtatatgac	240
cactatcagc	ctgtcattgt	ggatcatgtc	atttcgcgct	ctgagtttta	taccgcatat	300
acgccttata	agccagagat	ttcacaagga	gagctccagg	ctatttttga	attccaaacg	360
atgatctgtg	aactgacagg	catggatata	gccaaactcct	cgatgtatga	cggcggaaca	420
gccttggcag	aagcagcaat	gcttgcttca	ggccacacga	aaaagaaaaa	aattgttgtg	480
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aaagccaact	atgcaaagca	agaagcaaaa	aaagcaggcc	ttactgttat	gtttgacggg	1140
ccgatgttta	atgaattttg	catcaaaact	gatgagccgg	tgagagctgt	gaacaagcgt	1200
ttgctggcaa	aaggcatgat	tggcggatat	gatcttgggt	tgacgtatcc	agagctggac	1260
tgccatatgc	tgattgtctg	aacagagctg	agaacaaaaa	aagaaattga	cgcactcatt	1320
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<210> 32

<211> 705

<212> DNA

<213> Bacillus subtilis

<400> 32

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attctgctca	tcacaatcgg	cgtcaccctt	attatgggtt	ttgtgcaatt	taaggctcatt	120
tcaccgacct	accaggcgct	gacacagggtg	ctggttcatg	aatcagacgg	tgaagaaaac	180
tcgaatctca	gtgacatcca	gcgaaatctt	cagtatagca	gcacgttcca	atcgattatg	240
aaaagcactg	ccttgatgga	agaagttaag	gcggaattgc	acctatctga	atcggcttcc	300
tcgctgaaag	gaaaagtggg	taccagcagt	gaaaatgaat	cagaaataat	caacgttgcc	360
gttcaggatc	acgatccggc	gaaagcagct	gagattgcga	acacgttagt	gaacaagttt	420
gaaaaagaag	tagatgaaag	aatgaatgta	caaggcgta	atatattatc	agaggcgaag	480
gcttcggaaa	gcccgatgat	caagccggcc	aggctgcgaa	atatggtcat	ggcttttggc	540
gctgtgtgca	tgggcccgc	tacactggca	tttttctgc	attttctcga	tgatacatgc	600
aaaagcgcac	ggcagctcag	cgagagaacc	ggattgccat	gcttaggctc	cgttctctgat	660
gtccacaaa	ggcggaatcg	cgggataaaa	catttcgggg	agtga		705

<210> 33

<211> 684

<212> DNA
 <213> Bacillus subtilis

<400> 33
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 cagaccaact tgcgatctat cctcgtcacc tcctctgtgc ctggtgaagg taaatcggtc 180
 agtgcagcga atcttgccgc tgtctttgcg cagcagcagg aaaagaaagt actgctggtg 240
 gatgccgatt taagaaaagg gaccatcaat cagacgtttc aggttgataa tgtaaccggg 300
 ctgacaaatg tgctggctcg caatgcttca ctcatgaga cgggtgcaaaa gacgccgatc 360
 gataacttat atgtactgac aagcgggccc acccgccaa acccggcaga actgttgcct 420
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 gattcccttc ctcttttggc tgttgagat gctcagattc tagcaaatca gacagacggc 540
 agcgtgctcg tcgttttaag cggaaaaaca aaaaccgata ccgttctgaa agcaaaagat 600
 gcactggaac aatccaatgc gaagctgtta ggcgctcttt taaacaaaaa gaaaatgaaa 660
 aaatcggaac actattccta ctag 684

<210> 34
 <211> 1797
 <212> DNA
 <213> Bacillus subtilis

<400> 34
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 ctctcagct atcatgtgtg tgctttcctg ttcaatcagt ataaacagggt gtggacatac 180
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 aaagaaagta tcatgcctgc ggtgcaaaag ctcaaaatta attatattat tattgccatt 600
 ccttcaactcc gcacccatga gcttcagggtg ttatataaag aatgtgtgcg aaccggagta 660
 agcattaaaa ttatgcctca ttttgatgaa atgctgcttg gcacacgaac tgccggacaa 720
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 ccggtgctga tgcgctttat cgaggatttt catgagctgc cggaagccga cctgagagcg 1740
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<210> 35
 <211> 1146
 <212> DNA
 <213> Bacillus subtilis

<400> 35
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accaagctgc cgtatgtgga tgagaaattc tccatcccga ttcgcaggtc accttttgac 180
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<210> 36
<211> 837
<212> DNA
<213> *Bacillus subtilis*

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tcaatcgaca atgccattct tgtctatcag gcgtgcagac gcttgaagct tcctttatct 720
gattacatat atatcgcaaa accgttaatt cgcgccctta tgccctgcagc tgtgatgaat 780
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<210> 37
<211> 1155
<212> DNA
<213> *Bacillus subtilis*

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aatacgtctt ggaagaccgg cttcaactgg aaggatcgat tgcagctgct cgtgttcagg 420
cggctcattt tggcaaatgc gacagcgctg tgtgcctgcg gagaggatgc gggcagggtt 480
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<210> 38

<211> 1104

<212> DNA

<213> *Bacillus subtilis*

<400> 38

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attccgctcg	cttcacttgt	gctcgtgtca	ggctctcgcg	atcgagtcgg	cacggatttt	180
cagacgtaca	cgctgttgta	cgaattggcg	ggcgattatc	aaaatgtgtg	gcagatattc	240
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gttggttgtt	attttcttta	cagttatttg	cttatgccgg	tcgattcatc	ggttctgcct	1080
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<210> 39

<211> 1077

<212> DNA

<213> *Bacillus subtilis*

<400> 39

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aaaatcatac	tgacctgtgt	gccgtcccat	gacaatttgg	gagatcacgc	aattgcttat	180
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caagaaaaaa	caattttgaa	gcagccggag	atgggtgctgt	atttagacag	aagcaaggct	600
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gagcgcgtaa	cagccgcagt	caatgagctt	ttaacaaaag	aaacatcccc	tgcaggcttt	1020
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<210> 40
 <211> 1035
 <212> DNA
 <213> Bacillus subtilis

<400> 40
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 ggaacaccgg atcgttcagg cgaaattgca gaggactatg caaaacggga tgcgagaatc 180
 cgggtcattc atcaggcaaaa cggcgggctt agttcagcgc gaaatacggg aataaaggcc 240
 gcgcggggca cttacatcgg cttttagtag ggagacgatt atgtatcatc cgccatgttc 300
 cagaggctga ctgaagaagc ggagcaaaat cagcttgaca tcgtcggatg cggtttttac 360
 aagcagtcac cggacaggcg gacatatgtg ccgccgcagc ttgaggcaaa ccgcgtgctg 420
 acgaaaccag aaatgactga acagcttaaa catgctcacg aaacgagatt tatctggtat 480
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 gcgaagcagg catga 1035

<210> 41
 <211> 1002
 <212> DNA
 <213> Bacillus subtilis

<400> 41
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 gtgcttcccg gattcgttca tttatatgcc ggtgaggaag ccgtggctgt aggggtgtgc 180
 gctcatttac atgatggcga cagcattaca agcaccaca ggggacatgg acattgtatc 240
 gccaaaggct gtgacctgga cggcatgatg gcggaaattt tcgggaaagc gaccggattg 300
 tgcaaaaggca agggcggttc tatgcacatt gcggatcttg ataaaggcat gttaggcgca 360
 aatggaatcg tcggggggcg ctttacgctc gcatgcggat cagcgtcac ggctaaatat 420
 aaacagacta aaaatgtaag cgtttgcttt ttcggggacg gggcaaataa ccaaggtagc 480
 ttccacgaag ggctgaattt agcggctgta tggaaacctc ctgtcgtatt tgttgctgaa 540
 aacaacggct atggcggaagc taccctattt gagtacgcat cagcctgtga ttcaatcgcc 600
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 tcgattgaaa aagccgtctc gttcagcgaa gacagcccat atccaaaaga ttcggagctg 960
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<210> 42
 <211> 1029
 <212> DNA
 <213> Bacillus subtilis

<400> 42
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 ttgcaggatg atgaagcatg gggcgggtgta ttaggggtca caaagggact cgtacaggaa 180
 ttcgggcgta caagagtgtc ggacactccg atttctgagg caggctatat gggagcggct 240

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tatttgccga	caccagataa	aattgtcagc	gtcacgcttg	aattgcttgg	cgagccggca	1020
ttgaattaa						1029

<210> 43

<211> 1197

<212> DNA

<213> *Bacillus subtilis*

<400> 43

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tcggagaaaa	ttgaaatgga	gatcgaagcg	cctgaaaaag	gaacgctgat	cgatatcaaa	180
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acgatcctgc	cactcagcct	gacatttgat	cacagagcgt	gtgacggcgc	ccctgccgct	1140
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<210> 44

<211> 1377

<212> DNA

<213> *Bacillus subtilis*

<400> 44

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atgaatggtg	agatgacggc	agatatggcg	gagcatttta	tcgccgccca	tccgacttta	1320
tcggaaacat	tgcatgaggc	gctgttaagc	acgatcggcc	ttgcggtaca	tgcataa	1377

<210> 45
 <211> 582
 <212> DNA
 <213> *Bacillus subtilis*

<400> 45						
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cgtctcgtca	acgcctgcct	cagcaacatt	gaatttgcag	aagaaaaatg	gcggataaaa	540
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<210> 46
 <211> 1095
 <212> DNA
 <213> *Bacillus subtilis*

<400> 46						
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<210> 47
 <211> 1440
 <212> DNA
 <213> *Bacillus subtilis*

<400> 47

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aattggctgc	ggcacagcc	gagcatgccg	aatcgtgtgg	cgatcctgct	cccaaatagt	180
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gcctcctata	aaattccgaa	aaaatgggtg	tttgacagaca	gcttgccgga	aacgagcagc	1380
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<210> 48
 <211> 561
 <212> DNA
 <213> Bacillus subtilis

<400> 48

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atgtttacaa	aaggaggatg	a				561

<210> 49
 <211> 1299
 <212> DNA
 <213> Bacillus subtilis

<400> 49

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gccattaaag	caacaacaaa	aatcttgaac	ttagaacagc	agcttgtcct	tgaagcgttt	540
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<210> 50
 <211> 1350
 <212> DNA
 <213> *Bacillus subtilis*

<400> 50						
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gattttgtta	tggcgcacat	cagagtaggg	aaatacgcga	tgccgcgcgt	tgatgagcaa	300
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gagaaatcgt	tccaaaagct	gtggcaggcg	ctgatcctgt	caaaaacagt	gccgaacgcg	1260
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<210> 51
 <211> 1584
 <212> DNA
 <213> *Bacillus subtilis*

<400> 51						
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gatgaaacaa	aggttgaacc	cgacagcgta	ttccgcgcgc	ttggcgacac	cggcggtgtc	1500
aggaacggga	aggcgtttca	ggtaattatc	ggattaagcg	tgccgcagat	gcgggagcgt	1560
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<210> 52

<211> 1365

<212> DNA

<213> *Bacillus subtilis*

<400> 52

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agccatgtgc	ttcctttttt	tccatcaatt	tttatggaga	agatggcggg	ttttattaag	180
ctgtatttcc	cagtgttttt	gctcgggtgc	atttttggaa	aggtcgttga	aatggccggg	240
cttgccgcat	caatcgcgaa	aacaattgtc	cggcttgcgc	gggcaaaaag	agcgatactt	300
gccattgtgc	tgatgggtgc	tgtcttgacg	tacagcggtg	tcagcctggt	tgttgtcgta	360
tttgcgtgat	atccttttgc	gaaaaacatg	ttccaagaag	caaacatacc	aaaacgcctc	420
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tggctggggt	tgatgggcgc	agtgattgtg	ctggcagctg	ggatgctcta	tttggaatca	600
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<210> 53

<211> 717

<212> DNA

<213> *Bacillus subtilis*

<400> 53

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gatcaggag	taaaggattt	aaccgtttgc	agcaataact	gcggagtcga	tgactggggg	180
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acaggcgctg	gcacctccat	agccgaggga	aaagaacata	aaacattcgg	cggccggact	420

tatgtgctgg	agcgaggcat	taccggcgat	gtggcgatcg	tcaaagcgtg	gaaagcggac	480
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gcaggcaaga	tcacgattgc	cgaggcggaa	gaaatcgtgg	aagcaggaga	gctcgatcca	600
gatcacatcc	atacgccggg	aatttacgta	cagcatgtcg	tgcttggcgc	gagccaagaa	660
aaacggattg	aaaaacgaac	agttcagcaa	gcatcgggaa	agggtgaggc	caagtga	717

<210> 54

<211> 651

<212> DNA

<213> *Bacillus subtilis*

<400> 54

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aaaatggtaa	aagggatggg	cggcgccatg	gatctcgtca	acggggcgaa	acgaatcggt	420
gtcatcatgg	agcacgtcaa	taagcatggt	gaatcaaagg	tgaaaaaac	atgctccctt	480
ccgctgacag	gccagaaagt	cgtacacagg	ctgattacgg	atttggtgt	atttgatttt	540
gtgaacggcc	gcatgacact	gacggagctt	caggatggtg	tcacaattga	agaggtttat	600
gaaaaaacag	aagctgattt	cgctgtaagc	cagtctgtac	tcaattctta	a	651

<210> 55

<211> 774

<212> DNA

<213> *Bacillus subtilis*

<400> 55

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gaaaaagcag	cctccaagct	tgcaagaaga	ggctttgacg	cggcggccat	tccgtatgat	180
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acagacacct	ttgaacagct	gatcaaggct	atgctgacgg	ctccctttat	tgcaatgaag	360
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aatggattag	tgggctttgc	agggaaatcc	gcttataata	gcgccaagca	cggcgtcatt	480
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cgactgcttt	ccgtcaagga	aattgcggtg	tatgccgtgt	ttttggcaag	cgagaaggcg	720
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<210> 56

<211> 1788

<212> DNA

<213> *Bacillus subtilis*

<400> 56

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gttatcccag	ccaattcgct	gcgtgatgag	ctggccaaac	ggctcaaggc	atacatgaca	1740
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<210> 57

<211> 783

<212> DNA

<213> *Bacillus subtilis*

<400> 57

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gacaggagag	aagggttcca	ggcctttcaa	gaaaaaagac	gggccgtata	caagggaata	780
taa						783

<210> 58

<211> 900

<212> DNA

<213> *Bacillus subtilis*

<400> 58

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tttatgtccg	ccagcgagac	gcacaacaga	aaaaacatca	ataaatccac	ttctgaatcc	360
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gctaatacaa	ttgccctgca	ttttcatgat	acgagaggaa	ccgctctggc	caacatgggt	660
acagcactcc	aaatgggcat	cacgggtgtc	gacggctcgg	caggcgggct	tgggggatgc	720

ggctattata	aagacaaaga	tgcgaccaga	aaagcaatca	atcatgacgg	atggctgttt	1260
accggagatc	ttgctgtcat	ggatgaagac	gggtactgcc	gcatcaccgg	aagattaaaa	1320
gatatgctca	tcagaggcgg	cgagaacatt	tatccgcggg	aaattgaaga	atTTTTtatac	1380
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gcctattgca	aagggaataa	cgccccccac	aaaattccgc	gttatgttat	ttttacggat	1560
gactatccga	tgacggcctc	aggcaaaatt	caaaaatata	aactgcgaga	aaaaacgatt	1620
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<210> 61

<211> 1014

<212> DNA

<213> *Bacillus subtilis*

<400> 61

ttgaaaacga	taacaattgc	agctgaagaa	gcaaaggaac	tcgtttggca	aaagctggac	60
gggtgccgggt	tgaatgaacg	agatgctgaa	aaagtggcag	atgttctcgt	gcacgctgat	120
ttgCGcaatg	tacattcgca	tggcgtgctg	cacacagaac	actatgtgaa	caggctttta	180
gcgggaggga	tcaatcctgg	ggcacagcct	gtttttaaag	agacggggcc	tgtgaccggg	240
gtgcttgacg	gagacgatgg	tttcggtcat	gtgaattgcg	acatggcgat	ggaccatgca	300
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acgcatacag	acagtatcgt	tgtcccat	ggggggagga	ctcctatttt	agggacaaat	480
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acgtttttag	agcagatgga	tgccatgatt	gatgaactgc	agcaatcacc	gccggctggt	900
ggattcgaaa	gagtgtatgt	gcccggcgag	atcgagcagc	tgcatgaaga	aagaaataag	960
aaaaacggaa	tttctatcgc	ccggagcgtg	tatgaattct	taaaaagcag	gtga	1014

<210> 62

<211> 1020

<212> DNA

<213> *Bacillus subtilis*

<400> 62

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gttcttttcaa	aggatgatga	agtgtctcgtg	aaagtcaagc	gagtcggcat	ttgcggttca	120
gacatgcaca	tttatcatgg	aacgaatccg	ctcgctaccc	tcccagagag	catcggacac	180
gaggtaacgg	gacaagtgga	ggcagttggt	gcgaatgtac	agagcctaaa	acccggtgat	240
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ccgaatgttt	gcgcgaagct	ttctgtattt	ggcgtacatg	aggacggagg	catgcgggaa	360
tatattgtgc	ttccggaaaag	acagcttcac	gcggtctcaa	aggacttgcc	ttgggaggaa	420
gcagtcattg	ccgagcctta	tacgataggc	gcccaggcag	tgtggagagg	ccaggtggaa	480
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gcaaaactgg	cgggcgctgc	tgtcatgatg	actgacttga	acaacgagcg	gctggcattt	600
gcgaaagaaa	acggcgccga	tgctgttgta	aatgtccaag	cagaacatgt	tgccgagcgg	660
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gagacttttg	cactttcaat	tgaggctgtg	tcaccggcgg	gacatgtggt	tgtgcttgga	780
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accggatccc	gattgcagac	caatcagttt	ccaaaagtgg	tagagctttt	gaatggaggc	900
cgggttaatgc	ataacgggct	ggtgacccat	acattttcag	ttgatgacgt	tcacatgca	960
tttcagttta	ttaaggagca	tccagatcag	gtgcggaaaag	ccgtcatcac	gtttgattaa	1020

<210> 63

<211> 1080

<212> DNA
 <213> Bacillus subtilis

<400> 63
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 gtgtgggaaa aagaagaaat cagagccgaa actgaatata ttcaatccta tggttttcat 180
 gctgaagttg tagaaagcgt gaatgttcac gaagcgatta aacttgggaa cgaagaacgc 240
 ggccggtata ttgaaaacta caagcaaacg atccgcaacc ttgccggatt tggcgtgaaa 300
 gtgacttgct ataattttat gccggttttt gattggacac gcacggacat gttccggccg 360
 ctagaagatg gatcgaccgc tctgtttttt gaaaaggcca aggtggaaaag ccttgatcct 420
 caagagctga ttcggacggt ggaggaagca tccgacatga cactgccggg gtgggagccc 480
 gaaaaattgg ctccgatcaa agagcttttt gctgcctaca gaacggtcga tgaagaaaag 540
 ctatgggaca atttatcatt ctttttgcag gaaattcttc ctgttgctga ggcctatggt 600
 gttcaaattg ccattcatcc ggatgaccgc ccgtggccga ttttcggact gccgcgcatt 660
 atcacaggag aggcaagcta taagaaactg cgggcgatat cagattcacc gtctaattgt 720
 atcacccctt gtacagggtc aatgggagcc aatcccgcga acgacatggt ggagatcgct 780
 aaaacgtatg ccggcatcgc tccattttca catattcgca atgtgaaaat ttatgagaat 840
 ggcgatttta ttgaaacatc tcatttaaca aaggatggtt cgatcaacat tcaaggcgtg 900
 atggaagaac tgcataagca ggattacgaa ggatatgtca gaccggatca tgggcgccat 960
 ctttggggcg agcaatgccg cccgggatat ggcttatacg atcgggcact tggcatcatg 1020
 tatttgaacg ggctgtggga cgcttatgaa gcaatggcaa aaaaagaggt gggcatatga 1080

<210> 64
 <211> 837
 <212> DNA
 <213> Bacillus subtilis

<400> 64
 atgatccgc tgcattgagaa cctggctggt aaaacggctg tcatcactgg cggcagcggc 60
 gtgctttgct ctgcgatggc ccgggagcta gcccgctcat gcatgaaggt ggcgattttg 120
 aatcggacgg ctgaaaaagg ccaagcggtc gtgaaggaga taacggcggc tggcggcaca 180
 gcgtgcgctg ttgctgcgga tgtgctggac aggatgtcac tggagcgggc aaagggaagac 240
 atccttggcc aatttggcgc tgttgatctg ttaattaacg gggctggcgg caatcatcct 300
 gacgcgataa ccgatgtgga gacatatgaa gaagcgggag aaggccaatc cttttttgat 360
 atggatgaga ggggctttct aactgtattc tccaccaatc tcaccgggtgc gtttctggcc 420
 tcgcaagtgt ttggtaaaga actgctgaag gcggattcac ccgcgatcat caacctttct 480
 tccatgagtg cttattcacc tatgacgaag gttccggcat acagtgtgc gaaagcatcc 540
 atcaataatt ttacgatgtg gatggctggt cattttgccg aaaccgggct gcgggtcaat 600
 gcgattgccc caggcttctt tctgacaaaa caaaatcatg atctgtgat caaccaagac 660
 ggaacgttca ccagccgatc tcacaaaatt attgcgggaa caccgatgaa gcgcttcgga 720
 aaaccggagg atttgctcgg tacgctcctt tggctggcgg atgaatccta ttccggtttt 780
 gtcactggga tcaccgttcc tgcgatgga ggatttatgg cttattcagg tgtgttaa 837

<210> 65
 <211> 1269
 <212> DNA
 <213> Bacillus subtilis

<400> 65
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 tacctggatc gctcggcgct ttccattgca gtccttttta ttcaggatga tctcacattg 120
 tctgccacac aaatgggctt gattttcagc agtttttcga taggttatgc catttttaat 180
 tttcttgggg gcgtggcatc cgaccgctat ggggcaaagc tgacctgtt tgcgcgatg 240
 gttgtttggt cgctgttttag cggagcagtc gccctcgctt ttggttttgt cagcctgctg 300
 attatacgca ttctcttcgg aatgggagaa ggcccgcttt cggcgaccat caacaagatg 360
 gtgaacaact ggttcccgcg gaccagcgg gcgtccgtta tcggtgtaac caacagcggc 420
 acgcccctcg ggggagccat ttccggcccg atagtcggca tgatcgagc ggcgttcagc 480
 tggaaggtat ccttcgttct cattatgatt attggattga tatgggcagt gctctgggtc 540
 aagtttgtca aagaaaagcc gcaagagacg atcaaggaag caccggcaat aaaagcagaa 600

acgtctcccg	gagaaaaaat	tccgctcacc	ttttacctga	agcaaaaaac	agtcctgttc	660
acggcggttcg	ctttttttcg	ttacaactac	atcctcttct	tctttttgac	atggtttccg	720
agctatcttg	tcgacgagcg	gggattaagt	gttgaatcga	tgagtgtcat	cacggtcata	780
ccgtggattt	taggatttat	cgggctggct	gcgggggat	ttgtttctga	ctatgtgtac	840
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attcaagatg	tggttgatca	aaacaatgtc	ggttctgttg	gcggcttcat	gcatttcttc	1080
gccaacacgg	caggaattat	cggccccggt	ttaaccggat	ttattgttga	ccaaacaggc	1140
acgttttctg	gagcattttt	gcttgccggt	gggctggctg	tcttcgcttc	acttgcctgtg	1200
attcgttttg	tccgtccaat	cattggtaag	ccagcgggaa	cagaagctga	gaatcctgtg	1260
tcttattaa						1269

<210> 66
 <211> 705
 <212> DNA
 <213> *Bacillus subtilis*

<400> 66						
gtgcgcatcg	gggggttttg	gacaggacgt	atcgccgcgg	gcattgattt	cagcttgatc	60
cgcaaacacc	ctaaaatctt	ttgggggatac	agcgatatta	cgttttttaca	tactgccatt	120
catcaaaacà	caggtcttgt	cactttccat	ggccccgatgc	tcagcacgga	tattggcctt	180
gacgacgttc	acccgctgac	aaaagcgtca	tataagcagc	tcttcagga	gacggaattc	240
acctatacag	aagagctttc	tccgctgacc	gagcttgttc	ctggaaaagc	ggaaggcgag	300
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acgagaggaa	agcttctgtt	tattgaagat	attgacgagg	agccttatca	aatcgaccgg	420
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gattttcaca	attgtgtccc	ggtgaagcga	gagaagtctc	tctcgcttga	gcagggtgtg	540
gaagactata	ttatttctgc	gggcaggcct	gctctgagag	gatttaaaat	cggccactgc	600
tcgccaagta	ttgcggttcc	gatcggtgcg	aaagctgcta	tgaatacagc	agaaaaaaca	660
gccgtaatag	aggcgggcgt	ttcagaaggg	gcgctgaaga	catga		705

<210> 67
 <211> 1101
 <212> DNA
 <213> *Bacillus subtilis*

<400> 67						
atgaaaatca	ttcgaatcga	aacaagccga	atcgctgtcc	cgctgacaaa	gccgttttaa	60
accgcacttc	gcactgtgta	tacggctgaa	tcagtcatag	taaggattac	ttatgacagc	120
ggtgcagtcg	gatggggaga	agcaccocccg	acgttagtga	ttacaggaga	cagcatggat	180
agcattgaaa	gtgccatcca	ccatgtgttg	aagccggcat	tgcttgga	aagcctggcg	240
ggctatgagg	ccattctgca	cgacatccag	catcttctta	caggaaatat	gagcgcggaag	300
gctgctgtag	aaatggctct	atacgacggc	tgggcgcaga	tgtgcgggct	gccgctttat	360
caaatgcttg	gcggatctcg	agatacgctg	gaaacagatt	atactgtcag	tgtcaactca	420
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gcggtaaactg	ccattcggaa	aatggaggat	gcgggcctag	gcattgagct	tgtcgagcag	660
cctgtccata	aagatgatct	cgctgggctt	aaaaagggtga	cagatgcaac	agatacgccg	720
attatggctg	atgaaagtgt	ttttacaccg	cgccaggcgt	tcgaagttct	gcaaaccocgg	780
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attaatgcca	tggcggaggc	ctgcgggggtg	gagtgatatg	tcggcagcat	gacgaaacg	900
aagctgggca	ttacggccgc	ggcgcatttt	gcggcaagca	agagaaacat	cacacgcttt	960
gattttgacg	cgccgctgat	gctgaaaaaca	gatgtattca	atggcgccat	aacatatagc	1020
ggcagcacga	tttcgatgcc	tggcaaacccg	ggcctcgga	tcatacggggc	tgcgcttttg	1080
aaaggggaaa	aagagcaatg	a				1101

<210> 68
 <211> 891

<212> DNA
 <213> Bacillus subtilis

<400> 68
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 ccgtctgata aattcatgct tcaaccgact gtaatgatca gagactggct ggagcgcata 120
 acgtatgatg aacggccttg attatgtaca gacaatgtaa tccaaactca ggttctcttt 180
 ggcgaaaagg tacttgtgac ggcggaacag ggggaatggg tttctgtgat cgtgcctagc 240
 cagccatccc gaaaggatcc gcgcggatac ccgggctgga tgaaaaagta ccagctggaa 300
 aaaacaaagc ccatccatac acaacacgat gtgatgatca gcaaacctgc tgcctttttg 360
 tacagaagca atggggaaaa ggagatcgaa ttaagctttt tgacagttct gccccttatt 420
 gcaaaaagaaa acggatatct taagggtttc accgtttttg gggaaagggt tgtgaggcaa 480
 agtgatgcag tgcctgtcag ccaacagaaa gggactgctg aagacatcat tcaaacgggt 540
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 tccggattta tgtacagtat atttaaggcg aatggatata gcatcccccg tgatgcggga 660
 gatcaggcta aggcaggga ggttgtccc cttgatgata tgaaagccgg tgatctgctg 720
 ttttttgctt atgaggaagg aaaaggagcg attcatcacg tcggtctgta ttagggcggc 780
 gggaaaatgc ttcattctcc aaagacaggg aagtcaatcg aaatcctcac attaacagag 840
 acaatctatg aaaaagaatt atgtgcggtg cgccgctgtt tttcagaata a 891

<210> 69
 <211> 984
 <212> DNA
 <213> Bacillus subtilis

<400> 69
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 aagcggacag tcaaagctgt cgacgggggt acctttcaga ttcgtgaagg agaaacgttc 120
 gggctagtcg ggggaatcagg gtgcgggaaa tcaaccttgg ggagagtgt gatgcgcctt 180
 tatcagccga cagaaggaag cgtgacatac cgcggcacaa atcttcatgc actaagtga 240
 aaagagcagt ttgccttcaa ccgcaaaactg cagatgattt ttcaggacct ttatgcttca 300
 cttaacccgc gcatgaccgt tcgagaaatt attttgagc cgatggagat tcataatctc 360
 tacaataccc ataaagcacg gctttccgctc gtggacgagc tgcttgaggc agttgggctt 420
 caccgccgatt ttggcagccg ttatccgcat gaattcagcg gcgggcaaaag gcagagaatc 480
 gggattgcca gagcactgtc gctgaatcct gaatttatcg tggcggacga accgatttct 540
 gcacttgatg tctctgttca agcgcagggt gtcaacctgc tgaagcggct tcaaaaagag 600
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 aggatcggtg ttatgtactt aggacacatg atggaaatta cagagagcgg caccttgat 720
 cgtgaaccgc tccatcccta tacaaggcg cttttgtcct cgattccgat tccagatcct 780
 gaattggagg acaagcgtga gcgtattctc ttgaaagggg agctgccgag cccgggtcaat 840
 ccgccaagcg gctgcgtgtt tcgtaccgac tgtccggagc gatgcctgaa tgtggagaat 900
 ctcgtcccca gcttcaagaa atcgaacccg gccgttttgt cgcttgccat ttgtatcgaa 960
 atgctgaaac gaaggaaaaa gtaa 984

<210> 70
 <211> 1416
 <212> DNA
 <213> Bacillus subtilis

<400> 70
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 gatgatttaa agaaagtcat taatctgacc gaggatgaag aggaaggcgt cagatttct 180
 accaaaacga tcccctaaa tattacacct tactatgctt ctttaattga ccccgacaat 240
 ccgagatgcc cggtagcgtat gcagttctgt ccgctttctg aagaaatgca caaaaacaaa 300
 tacgatctgg aagaccgct tcatgaggat gaagattcac cggtagccgg tctgacacac 360
 cgctatcccg accgtgtgct gtttcttctg acgaatcaat gttccatgta ctgccgctac 420
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 gctgcaattg cttatatccg ggaaacaccc gaaatccgag attgtttaat ttcaggcggt 540
 gatgggctgc tcatcaacga ccaaatttta gaatatattt taaaagagct gcgcagcatt 600

ccgcatctgg	aagtcacag	aatcggaaca	agagctcccg	tcgtctttcc	gcagcgcatt	660
accgatcatc	tgtgcgagat	attgaaaaaa	tatcatccgg	tctggctgaa	cacccatttt	720
aacacaagca	tcgaaatgac	agaagaatcc	gttgaggcat	gtgaaaagct	ggtgaacgcg	780
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aaagtgatct	taagaaat	tgaagggtgtg	attacgtcat	atccggaacc	agagaattat	1140
atccccaatc	aggcagacgc	ctatttttgag	tccgttttcc	ctgaaaccgc	tgacaaaaag	1200
gagccgatcg	ggctgagtgc	cattttttgtc	gacaaagaag	tttcgtttac	acctgaaaaa	1260
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gatcggcggtg	agaaaagaga	tcagctcaaa	gaaaagaat	ttttggcgca	gcagaaaaaa	1380
cagaaagaga	ctgaatgcgg	aggggattct	tcatga			1416

<210> 71
 <211> 828
 <212> DNA
 <213> *Bacillus subtilis*

<400> 71						
atgctcaagt	caataaagag	tagcgggtgtc	acagcagttt	tggaccatga	cggctttaat	60
aaacgaatca	gagtgggttcg	ttatgacgga	gccattgaga	aggccctgcc	ggatatcgtg	120
gcagcggcaa	aagaagagaa	tgcagaaaaa	atcattgtct	atgcgaagca	gcatgatgag	180
ccgatccttg	ccaacaatt	atttgccggc	gagggctatc	taaagggtta	ttatctcggc	240
cattcggctt	gtgtcatggt	acgttacctt	tcagaaaagg	ggagacaaac	agattcttat	300
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agtacacccg	tttttacgat	gagaaaagca	gaaacaaacg	acatgtacca	gctatcgatg	420
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aagacgatga	atgcaaatatc	ggtgtattat	atcatgcttg	atcatgaccg	cctgatcagc	540
gcagcaagcg	cagaaatcaa	tccagagctt	gggcatgcag	aaataaccga	ttgcgctgtg	600
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aatgctgtgt	tgtaccattc	aggttatcag	tatggcggaa	ggctgatcaa	taattgcttt	780
atagccgaag	gccttgaaaa	catgaatatt	tggtgcaagc	aactgtaa		828

<210> 72
 <211> 654
 <212> DNA
 <213> *Bacillus subtilis*

<400> 72						
atgggcttgg	gagtagcaga	aagagaacag	attgcaaaac	gcgctgctac	tgaaattaag	60
cagggcatga	ttgtgaatct	cggatatcgg	atcccttcc	tggtaccgaa	ctttttgaag	120
cctgacatgc	aggtcatgtt	tcaagcggaa	aacgggtgtc	ttggcattgg	agaaagtccc	180
gaaaaggag	aagaggatgc	gcatttatgc	aacgcccggg	gatatcctgt	ccgcgctgta	240
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gacattacga	ttttaggcgc	cctgcagggtg	agccaatcag	gagatttggc	aaattggctt	360
gttcgggaa	aaaagggtgcc	tggtatgggc	ggggcgatgg	agcttgccca	aaaagcgaaa	420
aaagtgggtg	tcgtcatgag	tcatacagat	caaaagggaa	ggcctaaatt	aacagaaaga	480
tgtacgctgc	cattaactgc	tgcaggctgt	gtagatttga	ttattaccga	aaaagcggtt	540
cttgaggctg	atagccatca	cttcatttta	aaagagctga	tgaatggctc	gacaatcgat	600
gaggtgacga	ggctgacaga	agctgaaatc	aaaatagata	tgcttttttc	ttaa	654

<210> 73
 <211> 690
 <212> DNA
 <213> *Bacillus subtilis*

<400> 73
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atattggaca gcggtgtaac ggatttgact gtgatttgca atgacgccgg tttcccggat 180
atcggaatcg gcccgttat tgttaataca cgggtcaaaa ccctgatcgc ctgcgcatatc 240
ggttccaatc cagtagccgg aaaacagatg acagagggga cgtagaggt tcaattttca 300
cctcagggaa cgcttgcgga acggattcgc gccggcggag cggggcttgg cggattttta 360
accgacgtgg gcattgataa tcaaatggtt tgcgaaaaaa aggacatcgt aacagtggcg 420
ggaaaacgat acttgattga agaggcgctg actgctgatt ttgctttcat caatgcttac 480
attgcagatg aattcggcaa tctaacgtat gacaaaaccg cgcgcaatat gaacccgctt 540
atggcaatgg ccgccaggag aacctttgcc gaagctgagc gtatcgttcc gatgggggag 600
atttctgaag aatgattgt cacaccggg gtttttgtt aggggggtgt acgaagcgag 660
ggagtgaagt ggaaatgggc ttgggagtag 690

<210> 74
<211> 1335
<212> DNA
<213> *Bacillus subtilis*

<400> 74
atgagcagtt atttgattaa gccagagctt agctcggcct atccggttgt cagttatgcg 60
aagggttcat atgtttatga tcagaccgga aaaaaatata tcgacggctc gtcaggtgcg 120
gtgacatgta atatacgcca cggagtctgt gatgtgactg agaagctgaa agaacagctt 180
gatcaggtgt cttttgctta ccgctcacag tttacgagtg agcccgcga gcaattagcc 240
gctctcttgg cacaggagct gcccggagat gtgaattggt ctttttttgt caacagcgga 300
tcagaagcga tagaaacagc tatgaaaatc gccattcagt attggcagga aaaaaagcaa 360
acacaaaaat ccatcttttt gtctcgatgg agcagttacc acggaataac tttgggagcg 420
ctttcattgt ctggttttta tgaaaggaga taccggttca cccatctcat tgagcgggtat 480
ccagctatct cagctccaca tatttatcgg ctgaatcacg agacggaaga agactttggt 540
cagactgcag ctgatgaact ggacaccatg attaaaagaa tcggaagcca attcatcgcc 600
ggctttgttg ctgagcctat tattggtgct gcaggagcag cgattactcc gcctccggga 660
tattatgaga gattaagtga ggtatgccgc acacacgatg tgctttttat tgcagatgaa 720
gtgatgacgg ggcttgggag aacaggaagg atgctcgcga cagagcattg ggataccgta 780
cctgatattg ctgtactggg gaagggactc ggtgcggggg atgcacctat tgctgctgcc 840
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cacacatata gtgcacatcc ctattcagcc aaagctgctc ttgaagttaa gcgatatgtg 960
ttaaagcacg gcttgatcaa acaatcagaa aaaaaggcg ctgtgctgaa gaagaagctt 1020
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ggaatagaca gtggagaagg agatgctgtc attattgtct ctccttttac tatttcagac 1260
ggtgaaatgg aagagcttat ctctattttt tcagaaacag ttgcagcggg cgaaaaaaac 1320
ttaaaaaagg attga 1335

<210> 75
<211> 912
<212> DNA
<213> *Bacillus subtilis*

<400> 75
gtgatcacia gagatttttt cttattttta tccaaaagcg gctttctcaa taaaatggcg 60
aggaactggg gaagtcgggt agcagcgggt aaaattatcg gcgggaatga ctttaacagt 120
tcaatcccga ccatcgaca gcttaacagc caaggcttgt cagtactgt cgatcattta 180
ggcgagtttg tgaacagcgc cgaggctcga cgggagcgtg cggaagagtg cattcaaacc 240
attcgacaca tcgcggtaca ggagctgaac tcacacgttt ctttaaaaaat gacgtcttta 300
ggtttggata tagatatgga tttggtgtat gaaaatatga caaaaatcct tcagacggcc 360
gagaaacata aaatcatggt caccattgac atggaggacg aagtcagatg ccagaaaacg 420
cttgatattt tcaaagattt cagaaagaaa tacgagcatg tgagcacagt gctgcaagcc 480
tatctgtacc ggacggaaaa agacattgac gatttggatt ctttaaaccc gttccttcgc 540
cttgtaaaag gagcttataa agaatcagaa aaagtagctt tcccggagaa aagcgatgtc 600

gatgaaaatt	acaaaaaaat	catccgaaaag	cagctcttaa	acgggtcacta	tacagcgatt	660
gccacacatg	acgacaaaaat	gatcgacttt	acaaagcagc	ttgccaagga	acatggcatt	720
gccaatgaca	agtttgatt	tcagatgctg	tacggcatgc	ggtcgcaaac	ccagctcagc	780
ctcgtaaaaag	aagggtataa	catgagagtc	tacctgccat	acggcgagga	ttggtacggc	840
tactttatga	gacgccttgc	agaacgtccg	tcaaacattg	catttgcttt	caaaggaatg	900
acaaagaagt	aa					912

<210> 76
 <211> 1548
 <212> DNA
 <213> *Bacillus subtilis*

<400> 76						
atgacaacac	cttacaaaaca	cgagccattc	acaaatttcc	aagatcaaaa	ctacgtggaa	60
gcgtttaaaa	aagcgcttgc	gacagtaagc	gaatatattag	gaaaagacta	tccgcttgtc	120
attaacggcg	agagagtggg	aacggaagcg	aaaatcgttt	caatcaaccc	agctgataaa	180
gaagaagtcg	tcggccgagc	gtcaaaaagcg	tctcaagagc	acgctgagca	agcgattcaa	240
gcggtcgcaa	aagcatttga	agagtggaga	tacacgtctc	ctgaagagag	agcggtctgc	300
ctgttccgcg	ctgctgcca	agtccgcaga	agaaaacatg	aattctcagc	tttgcttgctg	360
aaagaagcag	gaaagccttg	gaacgagggc	gatgcccata	cggctgaagc	gattgacttc	420
atggagtatt	atgcacgcca	aatgatcgaa	ctggcaaaaag	gcaaaccggg	caacagccgt	480
gaaggcgaga	aaaaccaata	tgtatacacg	ccgactggag	tgacagtcgt	tatcccgcct	540
tggaacttct	tgtttgcat	catggcaggc	acaacagtgg	cgccgatcgt	tactggaaac	600
acagtgggtc	tgaaacctgc	gagtgtctaca	cctgttattg	cagcaaaatt	tgttgagggtg	660
cttgaagagt	ccggtattgc	aaaaggcgta	gtcaactttg	ttccgggaag	cggatcggaa	720
gtaggcgact	atcttgttga	ccatccgaaa	acaagcctta	tcacatttac	gggatcaaga	780
gaagtgggta	cgagaatttt	cgaacgcgcg	gcgaagggtc	agccggggcca	gcagcattta	840
aagcgtgtca	tcgctgaaat	gggcggtaaa	gatacgggtg	ttgttgatga	ggatgcggac	900
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tctgcagggt	cacgtgcagt	agttcatgaa	aaagtgtatg	atcaagtatt	agagcgtgtc	1020
attgaaatta	cggaaatcaa	agtaacagct	aaacctgaca	gtgcagatgt	ttatatggga	1080
cctgtcattg	accaagggtc	ttatgataaa	attatgagct	atattgagat	cggaaaacag	1140
gaagggcggt	tagtaagcgg	cgggtactgg	gatgattcga	aaggatactt	catcaaaccg	1200
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gtcgttgcat	tttgtaaaagt	gtcagacttt	gatgaagcct	tagaagtggc	aaacaatact	1320
gaatatgggt	tgacagggcg	ggttatcaca	aacaaccgca	agcacatcga	gcgtgcgaaa	1380
caggaattcc	atgtcggaag	cctatacttc	aaccgcaact	gtacaggtgc	tatcgtcggc	1440
taccatccgt	ttggcgggct	caaaatgtcg	ggaacggatt	caaaagcagg	cgggcccggat	1500
tacttggtc	tgcatatgca	agcaaaaaaca	atcagtgaag	tgttctaa		1548

<210> 77
 <211> 1398
 <212> DNA
 <213> *Bacillus subtilis*

<400> 77						
atggagtctt	ttttcaatag	tttgattaat	attccaagtg	atttcattctg	gaaataccta	60
ttttatatatt	taataggggt	tggattattt	tttaccatac	gttttggttt	tatccaattc	120
cgttatttta	ttgaaatggt	cagaatagta	ggggagaagc	cggaaggaaa	taaagggtgtt	180
tcattctatgc	aggcattctt	tatttcggcc	gcatcccagc	tcggcacagg	gaatttgact	240
ggtgtagcct	tagcaattgc	gacaggcgga	ccaggcgctg	tattttggat	gtgggtagtg	300
gctgcagtag	gcatggcttc	aagctttgtc	gaaagtacat	tagcacagct	ttataaggta	360
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agatggcttg	gcacgctttt	tgcaatctta	attaccgtct	cattcggctt	gatttttaac	480
gctgttcaaa	caaatacaat	tgctggagca	ttggatggcg	cattccatgt	aaataaaata	540
ggtgtagcca	tagttctggc	ggtttttaact	gcgtttatca	ttttcggcgg	tttaaaacgt	600
ggtgtcgctg	tttcacagct	aattgtgccg	ggttatggcag	gcatttatat	tcttatcgct	660
ttatttgggt	tcattcacgaa	tattacggct	ttccctggcg	ttatcgctac	aattgttaaa	720
aatgcttttag	gttttgaaca	agtcgtcggc	ggcggaatag	gcggcatcat	cgttatcggt	780
gcgcaacgcg	gacttttttc	aaacgaagca	ggaatgggga	gcgcacccaa	cgcggctgcg	840

acggctcatg	tatcccatcc	ggcaaagcaa	ggctttatcc	aaacattagg	cgtatttttc	900
gatacattta	tcatatgtac	gtccacagca	tttattattt	tgctgtacag	tgtaacgcca	960
aaaggcgacg	gcatccaagt	cacacaggct	gctcttaacc	atcacattgg	aggctgggcg	1020
ccgactttca	tcgcagtcgc	aatgttcttg	tttgcatcca	gttcagttgt	cggcaactat	1080
tattatggcg	agacaaacat	tgaattttatt	aaaacaagca	aaacatggct	gaacatttac	1140
cgtatcgctg	ttattgctat	ggttgtgtat	ggatctttat	caggcttcca	aatcgtttgg	1200
gatatggcgg	acctctttat	gggtatcatg	gcgctgatca	acttaattgt	gattgcgctg	1260
ctgtcaaacg	ttgcttataa	agtgtataaa	gattacgcga	aacagcgtaa	gcaaggactt	1320
gatcctgtgt	ttaaagcgaa	aaacatccca	gggctgaaaa	acgctgaaac	atgggaagat	1380
gagaaacaag	aagcataa					1398

<210> 78
 <211> 675
 <212> DNA
 <213> *Bacillus subtilis*

<400> 78						
atgaacacga	ttgattggga	attcatgata	tcagcggtcc	cgactttaat	tcaggccctt	60
ccgatcacct	tgtttatggc	aatagcagct	atgatttttg	ccattatcgg	aggacttatt	120
ctcgcaactca	ttacaaaaaa	caaaattcca	gtgcttcac	agctgtcaaa	gctgtatata	180
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cagctatttc	cagagatgag	caaaatgaca	gctctcacag	ctgccatcat	cgggttaagc	300
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gggcagctgg	aggcgtgcct	gtctgtcggt	atgacaaaat	ttcaggcata	cagacggatt	420
atthttgccg	aagcgatccg	aaatgcgatt	ccggcaacgg	gcaatacatt	tatcgggctc	480
ctgaaagaaa	cgtcactggc	ctttacatta	ggggtcattg	agatgttcgc	ccaaggggaag	540
atgtacgctt	caggaaacct	caaatatttt	gagacgtatt	tgccggttgc	gatcgtctat	600
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ccataccgga	cttag					675

<210> 79
 <211> 795
 <212> DNA
 <213> *Bacillus subtilis*

<400> 79						
atgaagatga	aaaaatggac	agtgcgtgct	ggtgctgcat	tattagcggt	gctctcagct	60
tgccgcaatg	gaaacagcag	cagtaaagag	gatgacaatg	tgcttcatgt	cgggtgcgaca	120
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gtgacagacg	aacgtaagga	aacgtataac	tttacgaaac	catacgctta	tgccgggaaca	360
cagattgtcg	tcaaaaaaga	caatacagac	atcaaatcag	tagacgattt	aaaaggcaag	420
acagtcgcag	ccgttctcgg	ttcaaaccac	gcgaaaaacc	ttgaaagcaa	agatcctgat	480
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ggccgtgtag	acgcttatgt	caacagccga	actgtattga	tcgcgcaaata	caagaagacc	600
ggtttgccat	taaagcttgc	aggagatccg	attgtttacg	aacagggttgc	attcccattt	660
gccaaaggacg	atgcgcacga	caagctccgc	aaaaaagtca	ataaggccct	agatgaattg	720
cgtaaagacg	gaacactgaa	aaaactctct	gaaaaatact	ttaatgaaga	tatcacagta	780
gaacagaagc	attaa					795

<210> 80
 <211> 498
 <212> DNA
 <213> *Bacillus subtilis*

<400> 80						
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ttgcgggctt	atgaaccgat	tcgaaagctc	ggcattcggt	ttgctgctgc	tcagtcggat	120
ttggatttgg	tgctgaaaaa	tattcgggaa	aatgcttgct	acgtcatgga	agaagacggg	180

cggatcatcg	cgaccatcac	cttgagaatg	ccttggggaa	aacagccggg	accgtatggc	240
gttccgcata	tctggtggtt	tgctgtggac	cccgacaccg	gtaaaaaagg	aatcgggtaca	300
aagctgcttc	aatggctgga	ggaaacaatc	cctcgcgata	cgttaaagg	tccgtttggt	360
tactcggaa	cagcggataa	gcatccgtgg	ctgattgaga	tgtacgaacg	aaaaggatat	420
gtccgctcag	gtgaacaaga	ccttggaaaa	gggcatatca	cagtctatat	gaaaaaacia	480
ttgggacatg	atctataa					498

<210> 81
 <211> 1326
 <212> DNA
 <213> *Bacillus subtilis*

<400> 81						
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gttgcgtctt	ggcggcacc	ggacgcgccg	tcagatgcga	gcatgaattt	ggattatttt	120
aaagagcttg	cgaaaaacagc	ggagcgaggc	aagctggata	tgctgttttt	agcggacagc	180
ctttcaattg	acagcaaata	acatccaaat	gtattaacaa	ggtttgagcc	attcaccctg	240
ctctctgctt	tggcgcaggt	cacatcaaaa	atcggactga	cagcaacagc	ctccactaca	300
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caaattctcc	aaaattactt	aggcgggaatt	gatttgtcgg	catatccgct	tgatgggccc	960
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gaagtgtttg	ttgatcaagt	ggttccgatt	ttacaggagc	gcggcgtggt	cagaaaagaa	1260
tatgaaggca	caacattacg	agagcacttc	ggtttggaaa	agccggtaaa	ccgctatgca	1320
aagtaa						1326